

# NASA TECH BRIEF

## Marshall Space Flight Center



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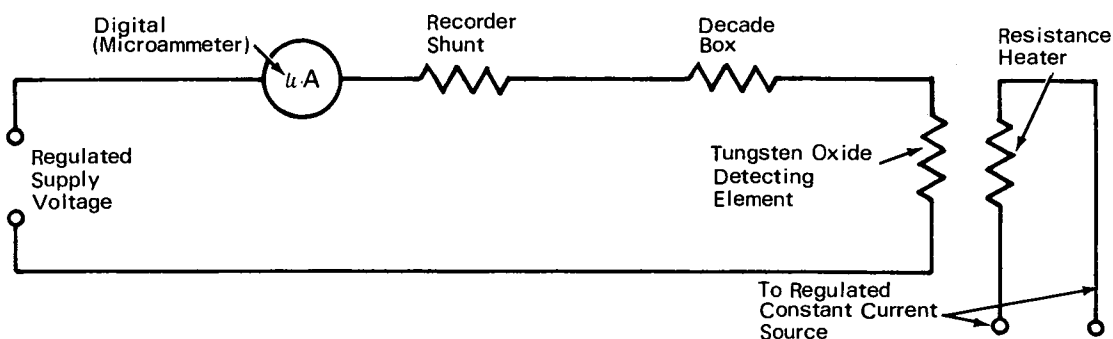
### Sensitive Gaseous Hydrogen Detection System

An extremely sensitive hydrogen detection system can measure the concentration of gaseous hydrogen in air to a sensitivity as high as several parts per million. The system uses a new type of hydrogen sensor as the detecting element, and has an overall detection sensitivity and response speed that are higher than conven-

hydrogen bubble chambers, mines, refineries, chemical process plants, and aerospace facilities.

#### Notes:

1. Hydrogen concentrations of from 2 parts per million to 30% have been measured with this system.



tional hot-wire or hot-thermistor types of detectors.

The detecting element is a thin-film tungsten oxide ( $\text{WO}_3$ ) resistor sensitized to hydrogen by the addition of very small amounts of platinum. When the sensitized detecting element is maintained at a temperature in the range of 523 K to 673 K (250° to 400° C), its electrical resistance (which is inversely proportional to the microammeter reading) varies by a factor as large as  $10^6$  to 1 in response to corresponding variations in the ambient hydrogen concentration. Because the detector is a rugged thin-film resistor requiring only simple electronic circuitry, the system can be conveniently and economically employed throughout a given installation.

The system can be adapted to serve as a leak detector and hydrogen-concentration hazard alarm wherever hydrogen is used; i.e., in industrial processes,

2. The following documentation may be obtained from:

National Technical Information Service  
Springfield, Virginia 22151  
Single document price \$3.00  
(or microfiche \$0.95)

#### Reference:

NASA-CR-10268 (N70-25297), Gaseous Hydrogen Detection System

#### Patent status:

No patent action is contemplated by NASA.

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